

**IN THE ABSTRACT:**

Please replace the abstract with the following:

02 ✓  
An improved method for producing a semiconductor device with a fluorine-doped silicon oxide interlayer insulating film. In one embodiment, the fluorine-doped silicon oxide layer (FSG layer) is formed in a process chamber. Thereafter, a silicon oxide layer is formed in the same process chamber over the FSG layer at a higher temperature than the FSG layer formation temperature. In another embodiment, after the FSG layer is formed, a surface layer of the FSG layer is selectively sputtered away before the silicon oxide layer is formed.